According to Carey, if the carbon gets buried in the ocean, it eventually becomes part of sedimentary rock, and doesn't return to the atmosphere for hundreds of millions of years. Though the carbon buried in the ocean by storms won't solve global warming, knowing how much carbon is buried offshore of mountainous islands such as Taiwan could help scientists make better estimates of how much carbon is in the atmosphere and help them decipher its effect on global climate change.

Source: Ohio State University

New biomass estimate of deep sea microbial organisms

In a research article recently published online by *Nature*, scientists have shown evidence of 90 billion tons of microbial organisms, expressed in terms of carbon mass, living in the deep biosphere. This tonnage corresponds to about one-tenth of the amount of carbon stored globally in tropical rainforests.

The authors: Kai-Uwe Hinrichs and Julius Lipp of the Center for Marine Environmental Sciences (MARUM) at University of Bremen, Germany; and Fumio Inagaki and Yuki Morono of the Kochi Institute for Core Sample Research at the Japan Agency for Marine-Earth Science and Technology (JAMSTEC) concluded that about 87% of the deep biosphere consists of Archaea. This finding is in contrast to previous reports, which suggest that Bacteria dominate the subseafloor ecosystem. To reach this conclusion, the researchers investigated sediment cores collected from several hundred metres beneath the seafloor of the Atlantic and Pacific Oceans and the Black Sea. The cored sediments included samples that were the result of research expeditions conducted by the Integrated Ocean Drilling Program (IODP).

According to co-author Prof. Kai-Uwe Hinrichs, a biogeochemist who led the research team, the two main objectives were to find out which microorganisms can be found in the seafloor, and how many of them are living down there.

In general, life below the seafloor is dominated by minute unicellular organisms. According to the new study, Bacteria dominate the upper 10 cm of the seafloor. Below this level Archaea appear to take over the major fraction of the biomass pool making up at least 87% of organisms that colonize the deep biosphere.

The Integrated Ocean Drilling Program (IODP) is an international marine research drilling programme supported by 23 countries dedicated to advancing scientific understanding of Earth by sampling and monitoring subseafloor environments.

Source: IODP

Madagascan turtle success

The first hatching of Green Turtles recorded as a direct result of efforts to protect the species in southwest Madagascar has occurred. This marks the success of a campaign by the NGO Blue Ventures. The Green Turtle (*Chelonia mydas*) is found in the waters off southwest Madagascar, but adults are targeted by fishermen and nests are usually raided. The beach's guardian, resident Sosy Kadioke said: "It was the first time people had ever seen baby turtles." Residents of the remote village of Lamboara have now voted to protect surrounding beaches, outlawing turtle nest raiding and targeted turtle fishing, to protect turtle nests along a 50 km stretch of coastline.

The campaign co-ordinator, Charlotte Gough said: "When one village chooses to do something, others follow. Village presidents from elsewhere are already showing an interest in the turtle project." This work is part of a broader Blue Ventures programme in southwest Madagascar, which includes the creation of Madagascar's first community-based marine protected area network, an initiative being used as a blueprint for the creation of 50 further marine reserves in the country, part of an African Development Bank-funded marine conservation programme. Last year Blue Ventures' work in the region received the United Nations Development Programme's prestigious Equator Prize for efforts to conserve local biodiversity and alleviate poverty.

Charles Sheppard

Quindao algal bloom culprit identified

Early July 2008 China mobilized more than 10,000 people and 1,400 boats into the fight to clean up a vast algal bloom threatening the upcoming Olympic sailing events in the sea area of east China's Qingdao, just one month before the start of the games (see *Mar. Poll. Bull.* **56**, 1388).

According to Xinhua news agency, the algae had arrived in late May and covered 13000 km^2 of sea, occupying about a third of the area that was planned to be used for the sailing competition. By July 16, 1 million tonnes of algae had been cleared and Chinese authorities declared the Olympic sailing venue to be algae-free. Authorities and some scientists regarded the Qingdao algae bloom as a harmless natural phenomenon related to seawater temperature and salinity, wind and currents. Other scientists blamed the bloom on increased rainfall and warmer waters in the Yellow Sea and Olympic Sailing Committee officials believed that the harmful algae were a "foreign enemy", having invaded the Qingdao coastal waters from an unspecified area offshore.

A more detailed study carried out at the Universities of Ghent, Algarve and Belfast have shown that, morphologically, the alga unmistakably belongs to the green macro-algal genus *Ulva*. Species level identification in the genus, however, is confounded due to the lack of distinguishing characters and a high degree of morphological variability. Using phylogenetic analysis it has been shown that the bloom forming *Ulva* from Qingdao is very similar to *U. procera* and *U. linza*, with the Chinese *Ulva* genetic sequence being identical to those of specimens collected from Finland, Portugal, New Zealand and Japan.

The Qingdao bloom is a typical illustration of a green tide, which is a type of algal bloom caused by proliferation of unattached green seaweeds, generally members of the genus *Ulva*. These blooms are triggered by a combination of different factors such as eutrophication, high temperature and irradiance level, and slow turnover of marine waters.

The data reported here should help to eliminate some of the misconceptions surrounding its occurrence. *U. linza* has been reported to bloom in this area before and is hence certainly not a recently introduced "foreign enemy". The green tide was likely caused by *Ulva* populations which were present in or near the coastal waters of Qingdao, and probably mainly triggered by a combination of eutrophication and high sea water temperatures.

F. Leliaert, E-J. Malta, A. H. Engelen, F. Mineur & O. De Clerck

More floods for drying Thames basin

A drying Thames river basin in the UK would still face five times the current risk of flooding by 2080, a recent assessment of the effects of climate change has found.

The *Thames Vulnerability Assessment Report* prepared by WWF-UK also found dire results for fish and wildlife, the lawns and flowerbeds of the traditional English garden and London's antiquated sewers and drains.

The 14 million people in the internationally important basin, and the additional two million expected to join them by 2026, also face a future of water shortages.

Peak river flows are predicted to increase by 20% leading to a significant rise in the frequency and severity of surface water flooding,